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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,283	05/18/2004	Daniel Charles Coy	17000US01 C	6629
26689	7590	11/02/2005	EXAMINER	
WILDMAN HARROLD ALLEN & DIXON 225 WEST WACKER DRIVE, SUITE 2800 CHICAGO, IL 60606			MILLER, JONATHAN R	
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			3653	

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/849,283	<b>Applicant(s)</b> COY ET AL.	
	<b>Examiner</b> Jonathan R. Miller	<b>Art Unit</b> 3653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 7/29/05
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22-39, 41-50 and 53-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-39, 41-50 and 53-71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 7/29/05 have been fully considered but they are not persuasive.
2. With regards to the new matter rejection, Applicants arguments and affidavit do not overcome the rejection. Applicant's cited article does not clearly state that "sympathetic flow" is limited to the definition the Applicant desires. The article uses the phrase "sympathetic vortex formation" once and references some figures, purported displaying this flow. The Examiner contends, however, that the article, nor the affidavit, make clear that "sympathetic flow" can only be defined as Applicant desires. Any flow that causes another flow to occur is within the meaning of sympathetic flow. For example, in a cyclone separator, a flow is begun along the outer walls flowing in one direction, which then causes a flow in the center of the separator in an opposite direction. This falls within the definition of sympathetic flow -- existing or operating through an affinity, interdependence, or mutual association. Thus, Applicant's further limitation of the definition of "sympathetic flow" to that shown on page 11 of Applicant's remarks of 7/29/05 and earlier arguments, is non-permissible new matter.
3. Applicant also states that the flow that occurs in the apparatus is inherent, and thus not new matter. Applicant uses the affidavit of the inventor to support this conclusion, and states in the arguments dated 7/29/05 that "*in select embodiments* of Applicant's invention, the configuration and dimensions of the chamber, as well as the positioning of the inlet port and the flow rate for introduction of the gas stream necessarily yield 'sympathetic' flow patterns" (page 14) (emphasis added). Applicant's disclose a range of dimensions of the chamber and a range of

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flow rates. To say that in some of these situations, a particular flow pattern occurs cuts against the argument that the property is inherent. Examiner contends that in some of these situations (i.e. in other embodiments disclosed by the applicant—the non-select embodiments) the particular flow pattern does not occur, and thus cannot be inherent.

4. With regards to the anticipation rejection, Applicant argues that the reference fails to disclose dimensions and thus cannot be used to reject the claims. The reference does disclose dimensions that are explicitly directed to Fig. 2 (col. 3, lines 61+; col. 6, lines 40+). Additionally, Examiner contends that the dimensions stated in col. 2, lines 68+ and col. 3, lines 1+, while specifically stated as describing Fig. 1, are generic to both embodiments. This is exemplified by claims 1, 5, 8 and 9. Claim 8 is directed to Fig. 1 and claim 9 is directed to Fig. 2, whereas claims 1 and 5 are generic to both. Thus the dimensions are sufficiently disclosed to allow a rejection partially based upon Fig. 2.

5. Additionally, Applicants affidavit admits that they cannot ascertain whether Zelazny's geometry would establish the "sympathetic" flow pattern (para. 17), while also stating that "sympathic flow patterns are never established" (para. 12), seemingly contradicting himself.

#### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 22 – 39 and 41 – 43, 46 – 50, 62-68, 70 and 71 are rejected under 35

U.S.C. 102(b) as being anticipated by Zelanzky et al. The reference discloses a settling chamber

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having a top section and bottom section; an outlet port positioned on the top section; and an inlet port positioned on the bottom section; wherein a ratio of height to width of the settling chamber is between about 1:1.14 and about 1:4 and a ratio of the position of the inlet port relative to the bottom section to the diameter of the inlet port is between about 1:2 and zero (Fig. 2).

8. With regards to claim 23, the reference further discloses the width is about 48 inches (col. 3, lines 1+).

9. With regards to claim 24, the reference further discloses the bottom section comprises: a base; and an inlet port connected to the sidewall; and the ratio of the size of the base to the size of the inlet port is approximately 4 to 1 (col. 2, lines 67+).

10. With regards to claim 25, the reference further discloses the inlet port is located approximately one half the inlet port size (diameter) higher than the base (Fig. 2).

11. With regards to claim 26, the reference further discloses the distance from the bottom section to the inlet port is about 6 inches (col. 3, lines 60+).

12. With regards to claim 27, the reference further discloses the sidewall is cylindrical (Fig. 2).

13. With regards to claim 28, the reference further discloses the inlet port is generally circular and a central axis of the inlet port is perpendicular to a central axis of the sidewall (Fig. 2).

14. With regards to claim 29, the reference further discloses the inlet port is generally circular and a ratio of a diameter of the sidewall to a diameter of the inlet port is 4 to 1 (col. 2, lines 67+).

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15. With regards to claim 30, the reference further discloses the inlet port is generally circular and a ratio of the height of the settling chamber to a diameter of the inlet port is greater than 2.8 (col. 2, lines 67+ and Fig. 2). Again, ratios can be determined from the figure.

16. With regards to claim 31, the reference further discloses the ratio of the height of the settling chamber to the diameter of the inlet port is greater than 4.8 (col. 2, lines 67+ and Fig. 2). Again, ratios can be determined from the figure.

17. With regards to claim 33, the reference further discloses the top section has a frustoconical shape (Fig. 2).

18. With regards to claim 34, the reference further discloses the top section has a cone angle of 90 degrees (Fig. 2).

19. With regards to claim 35, the reference further discloses the outlet port is located at a top portion of the frustoconical shape (Fig. 2).

20. With regards to claim 36, the reference further discloses the apparatus is constructed of stainless steel (col. 3, lines 2+)

21. With regards to claim 37, the reference further inherently discloses the inlet port is welded to the settling chamber.

22. With regards to claim 38, the reference further discloses introducing a gas fluidized particle stream into a settling chamber, the settling chamber comprising a bottom section, a top section, and an outlet port; establishing a gas stream flow pattern within the settling chamber that retards transportation of one group of particles to the outlet port and facilitates transportation of another group of particles to the outlet port, wherein the gas stream, flow pattern includes a first recirculating flow pattern in the bottom section and a sympathetic second recirculating flow

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pattern in the top section; and collecting the other size of particles at the outlet port (col. 2, lines 64+).

23. With regards to claim 39, the reference further discloses the one group of particles has a particle size less than 10 microns and the other group of particles has particles greater than 10 microns (col. 4, lines 5+).

24. With regards to claim 41, the reference further inherently discloses creating an interface between the first flow pattern and the secondary flow pattern. The interface must exist between the two adjacent flow patterns.

25. With regards to claim 42, the reference further discloses the axes of rotation of both recirculating flow patterns are primarily horizontal and substantially perpendicular to the inlet stream (Fig. 2).

26. With regards to claim 43, the reference further discloses radial introduction of the gas fluidized particle stream into the settling chamber (Fig. 2)

27. With regards to claim 46, the reference further discloses introducing a gas fluidized particle stream comprising one of metal oxide nanoparticles, metal nanopowders, metal nitride, mixed metal oxides, metal carbides and metal sulfide nanoparticles. The reference discloses separation of toner particles. These are a metal nanopowder.

28. With regards to claim 47, the reference further discloses introducing a gas fluidized particle stream comprising particles having a minimum particle size of approximately .001 micron. Toner particle size varies on the order of microns and 10s of microns. Examiner contends that the reference thus inherently discloses a minimum particle size of approximately .001 micron.

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29. With regards to claim 48, the reference further inherently discloses introducing a gas fluidized particle stream comprising free particles. Toner particles are free particles.

30. With regards to claim 49, the reference further inherently discloses introducing a gas fluidized particle stream comprising particle clusters. Toner particles are free particles that tend to cluster.

31. With regards to claim 50, the reference further inherently discloses introducing a gas fluidized particle stream comprising free particles and particle clusters. Toner particles are free particles that tend to cluster.

32. With regards to claim 62, the reference further discloses providing a settling chamber comprising a base and an inlet port positioned on a side of the settling chamber, introducing a gas fluidized particle stream into the settling chamber through the inlet port, establishing a gas stream flow pattern within the settling chamber, the flow pattern including an axis of rotation horizontal and substantially perpendicular to the inlet port (Fig. 2)

33. With regards to claim 63, the reference further discloses the gas particle stream includes a first recirculating flow pattern and a second recirculating flow pattern.

34. With regards to claim 64, the reference further discloses the gas fluidized particle stream comprises particles having a minimum particle size of approximately .001 micron. Toner particle size varies on the order of microns and 10s of microns. Examiner contends that the reference thus inherently discloses a minimum particle size of approximately .001 micron.

35. With regards to claim 65, the reference further inherently discloses a gas fluidized particle stream comprising free particles. Toner particles are free particles that tend to cluster.



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36. With regards to claim 66, the reference further inherently discloses a gas fluidized particle stream comprising particle clusters. Toner particles are free particles that tend to cluster.

37. With regards to claim 67, the reference further inherently discloses the gas fluidized particle stream comprising free particles and particle clusters. Toner particles are free particles that tend to cluster.

38. With regards to claim 68, the reference further discloses a top portion and a bottom portion, an inlet port positioned in a sidewall of one of the top and bottom portions, the inlet port directing a gas stream into the settling chamber in a direction transverse to the opposing sidewall of the settling chamber, resulting in a first recirculating flow pattern in the bottom portion and a second sympathetic recirculating flow pattern in the top portion, and an outlet port above the inlet port (Fig. 2).

39. With regards to claim 70, the reference further discloses the axes of rotation of both flow patterns are primarily horizontal and substantially perpendicular to the inlet stream (Fig. 2; col. 3, lines 65+).

40. With regards to claim 71, the reference further discloses the inlet allows radial introduction of the gas stream into the settling chamber (Fig. 2).

### *Claim Rejections - 35 USC § 103*

41. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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42. Claims 44, 45, 53 - 61 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zelazny et al. While the reference fails to explicitly disclose introducing the gas fluidized particle stream at a given volume flow rate of 10-1000 scfm, and more particularly introducing the gas fluidized particle stream at a given volume flow rate of 100-200 scfm, the reference does disclose the importance of flow rates to create the critical suspension velocity. This is based on the particle density, tank size and inlet pressure (col. 4, lines 14+). This illustrates that at the time of the invention, it would have been obvious to one of ordinary skill in the art to optimize the flow rates based on the variables as set forth in the reference. It has been held that discovering the optimum or workable ranges involves only routine skill in the art. It has also been held that discovering an optimum value of a result effective variable involves only routine skill in the art. With regards to claim 56, the reference further discloses a first recirculating flow pattern; and a second recirculating flow pattern (Fig. 2; col. 3, lines 65+).

43. With regards to claim 57, the reference further discloses a first recirculating flow pattern in the bottom section; and a second recirculating flow pattern in the top section (Fig. 2; col. 2, lines 40+). These are inherent based upon the shape of the vessel and the particles separated therein. What is a flow pattern? A pattern of flow. The shape of the vessel dictates one pattern of flow in the bottom section, which is larger in diameter and cylindrical, and another pattern of flow in the upper section, which is frustoconical.

44. With regards to claim 58, the reference further discloses creating an interface between the first flow pattern and the second flow pattern. The interface must exist between the two adjacent flow patterns.

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45. With regards to claim 59, the reference further discloses the second recirculating flow pattern is sympathetic the first recirculating flow pattern, i.e. operating through an affinity, interdependence, or mutual association.

46. With regards to claim 60, the reference further discloses radial introduction of the gas fluidized particle stream into the settling chamber (Fig. 2).

*Claim Rejections - 35 USC § 112*

47. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

48. Claims 22-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 22 states "a ratio . . . is between about 1:2 and zero". What is a ratio of zero? This renders the claim indefinite.

*Conclusion*

49. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan R. Miller whose telephone number is (571) 272-6940. The examiner can normally be reached on M-F: 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald P. Walsh can be reached on (571) 272-6944. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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